Golden Meadow Plant Materials Center

Year 2001 Progress Report Of Activities

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Louisiana's coastal land loss remains a critical problem not only for the state but the nation as a whole. The gradual retreat of Louisiana's coastline increases in significance with the passing of time. Various federal, state, local, and private organizations and individuals are working diligently to address coastal erosion. The NRCS serves in various capacities by administering programs and entering into partnerships to promote, implement, and advance coastal conservation. The NRCS Plant Materials Program is playing an important role by studying and developing vegetative solutions for coastal restoration. The NRCS Plant Materials Program at the Golden Meadow Plant Materials Center (PMC) is recognized as one of the leaders in developing and providing suitable plant materials and plant science technology specifically for coastal conservation needs.

A new partnership formed with the Louisiana State University Agricultural Center (LSU AgCenter) is adding new dimensions to coastal restoration and enhancement. This collaborative effort combines both organizations skills and strengths so that the best plant science and coastal plant technology can be achieved for a more-sustainable and productive coast.

The PMC strives to strengthen partnerships, meet the needs of the plant materials program, and advance plant technologies for coastal environments. Major objectives are to:

- develop improved plants that will persist in a dynamic coastal marsh environment
- develop cultural techniques for the successful use of improved plant materials
- develop and transfer effective plant science technology that addresses critical wetland conservation needs
- release and provide foundation plant materials for the commercial increase of improved conservation plants
- promote the use of tested and proven plant materials to solve specific coastal wetland conservation problems
- cooperate with Louisiana State University Agricultural Center, Louisiana Department of Natural Resources, and Barataria-Terrebonne National Estuary Program to expand the technology and role of utilizing native plants for the conservation and preservation of coastal environments.

NRCS Natural Resources Conservation Service

Re-Introduction and Establishment of River Cane on Tribal Lands

NRCS and the Chitimacha Tribe of Louisiana recognize the importance of river cane for use in traditional cultural arts such as basketry and additionally wildlife habitat, erosion control, windbreaks, and nutrient management. Until recently, there was little interest in the propagation of river cane and the management of existing stands. With the need to preserve a living cultural heritage the NRCS is assisting to re-introduce and establish native river cane on Chitimacha tribal lands. The PMC has obtained vegetative plant materials in cooperation with private landowners. The plant materials were accessioned, divided and grown for plant increase at the PMC. Container grown plants were then returned and planted in designated tribal owned sites. Plant performance information will be used to develop planting and management guides. This information will be provided to the Chitimacha Tribal Council and NRCS Field Offices.

Evaluation of Live Oaks For Planting and Establishment on Coastal Beaches and Barrier Islands

Live oaks are native to coastal plains of the southern Atlantic states and Gulf of Mexico. Live oaks are long-lived trees typically having short trunks with very large girth and wide spreading limbs. There are many live oak ecotypes found growing along the coastal plains that may have potential for use on Louisiana's vanishing barrier islands and other sandy coastal habitats. A woody component will help to restore lost biodiversity, improve stabilization, and benefit wildlife habitat. With the assistance of NRCS employees, acorns were collected and sent to the PMC from Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, and South Carolina. A live oak plantation has been established on the PMC. Other plants are being grown for field evaluation plantings on selected barrier islands. If successful, live oaks will offer an excellent adjunct plant for improving coastal wildlife habitat.

Woody Plant Species Selection for Conservation, Restoration, and Neotropical Habitat Enhancement

Coastal erosion and wetland deterioration are serious and widespread problems affecting Louisiana's coastal zone. The majority of Louisiana's erosion is concentrated on the barrier islands and headlands that front the Mississippi River deltaic plain. Barrier

islands are key elements in the ecology of the lower Pontchartrain, Barataria, and Terrebonne basins. Historically, the estuaries landward of the barrier island chains have been protected from the destructive forces of high wave energy, storm surges, and salt-water intrusion. In recent decades the islands have experienced landward migration, island narrowing, segmentation, and area loss. The continued loss of these barrier islands will result in the collapse of the estuaries and wetlands that they protect and will severely disrupt coastal fisheries and other aquatic wildlife. In addition, barrier islands have significant habitat value for migratory songbirds, breeding shorebirds, and turtles.

To address this critical need the Louisiana NRCS Plant Materials Program is collecting seed of selected tree and shrub species for propagation, planting, and evaluation on barrier islands, dedicated sediment, restored marsh, and other coastal areas of Louisiana. The NRCS and Barataria-Terrebonne National Estuary Program are working together to develop woody plant species technology applicable to Louisiana's coastal wetlands.

Evaluation of Giant Bulrush for Coastal Wetland Restoration and Stabilization

Native species are important to Louisiana's vanishing marshes. In recent years, wetland nursery growers and other agencies have asked the PMC to conduct research on giant bulrush. Vegetative samples were collected from 56 naturally occurring populations of giant bulrush found growing throughout coastal Louisiana. The collections were delivered to the PMC for vegetative propagation and plant increase.

The assembly has been planted at 4 sites where salinities, soils, and water depths vary. Plant performance data is being collected through 2002. Promising ecotypes well be selected and increased for further testing. Due to the commercial demand for giant bulrush, a release will be available in the near future.

Smooth Cordgrass Studies to Advance Coastal Plant Technology for Louisiana's Vanishing Marshes

Smooth cordgrass is the dominant plant found in Louisiana's coastal salt marshes. This species is also the dominant plant used for coastal restoration plantings. Various studies are being conducted in cooperation with the LSU AgCenter to address specific areas of smooth cordgrass improvement and planting technology. Four of the studies include:

Smooth Cordgrass Seed Production and Field Management Techniques

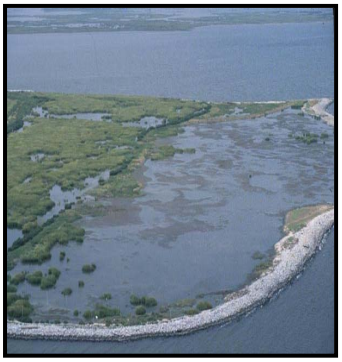
Typically large-scale conservation plantings in coastal Louisiana have been accomplished with expensive and labor-intensive containerized plant materials. A much more efficient method of establishing smooth

cordgrass is by seed. The purpose of this study is to develop methods and techniques for the establishment, maintenance, harvesting, and handling of smooth cordgrass in managed seed production fields. Six acres of constructed ponds have been planted to smooth cordgrass. The planting is divided into 32 plots. Management treatments such as fertilization, pesticides, burning, and herbivory are being tested. The PMC is working with LSU AgCenter plant scientists to study and develop technology applicable for commercial production.

Evaluation of Smooth Cordgrass Ecotypes for the Improvement of Selected Characteristics

Smooth cordgrass seed was collected by hand from native populations found growing throughout the coastal marshes of Louisiana in 1988. Seed culms were collected from 126 sites. In addition, 40 seed collections were provided by the LSU AgCenter. Seed collections were thrashed, placed in cool storage for 60 days and then removed for germination. Germinating seeds were transplanted to containers to grow out for field evaluation plantings. Container grown plants from each collection has been planted to three marsh sites for evaluation of selected plant performance characteristics.

Smooth Cordgrass Remediation of Selected Brown Marsh Sites



First indications of brown areas in coastal marshes were reported to state and local agencies in 1999. The Governor of Louisiana issued a proclamation in 2000 declaring Lafourche, Terrebonne, Jefferson, and Plaquemine Parishes to be in a state of emergency because of the rapid disappearance of marsh due to "Brown Marsh Phenomenon". The NRCS, along with other Federal, State and Local agencies, and State Universities have developed partnerships to find cause, effects, and solutions for the dieback phenomenon. The PMC has collected surviving plant materials of smooth cordgrass from 20 impacted brown marsh sites. Plant collections were vegetatively propagated and increased.

Container grown plant materials were then transplanted to nine severely impacted brown marsh sites. Plant performance data will be gathered through 2002. The significance of this study is to determine if there are naturally adapted smooth cordgrass ecotypes that are resistant to the browning phenomenon. Information of the results will be available upon the completion of study.

Aerial Seeding Application and Establishment of Smooth Cordgrass

Materials used for re-establishing smooth cordgrass have mainly been containerized, plugs, or multi bare-rooted materials. Intense manual labor and mechanical plantings have proven to work but the high expense and acreage needing re-vegetation has been a problem for years. Although aerial seeding of smooth cordgrass has never been used in re-vegetating marshes, it is widely used by the rice farming industry. The PMC and the LSU AgCenter is using knowledge from aerial rice seeding technology and applying it to testing principles and potential use for establishing smooth cordgrass.

The first aerial seeding trails began in 2001. The knowledge gained will be used to further develop and improve applications again in 2002.

It is hoped that technological developments resulting from these tests will advance the

efficiency of smooth cordgrass establishment, substantially reduce the per-acre cost, and increase the accessibility of coastal wetlands to vegetative restoration.

New Plant Release

Caminada Seaoats (*Uniola paniculata)* is released to provide a locally adapted ecotype for use on low profile sand dunes, and for dune creation, enhancement, and stabilization of coastal beaches and barrier islands in the north central Gulf of Mexico basin. Caminada is a pre-varietal vegetative release. Information can be obtained from the PMC.

Upcoming Plant Releases

Marshhay cordgrass (*Spartina patens)*
Gulf cordgrass (*Spartina spartinae*)
Smooth cordgrass (*Spartina alterniflora*)

For more information on any of these topics or additional information about the Golden Meadow Plant Materials Center visit our web site at **www.la.nrcs.usda.gov** or **www.plant-materials.nrcs.usda.gov**